Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) : A method ~~for the~~ of blind identification of sources within a system ~~comprising~~ including P sources and N receivers, ~~wherein the method~~ compris[[es]]ing ~~at least one~~ the steps of [[for]] [[the]] ~~identification~~

identifying [[of]] the matrix of [[the]] direction vectors of the sources from the information proper to the direction vectors $\mathbf{a}_p$ of the sources contained redundantly in the m=2q order circular statistics of the vector of the observations received by the N receivers.

2. (currently amended): [[A]] The method according to claim 1, wherein m = 2q order circular statistics are expressed according to a full-rank diagonal matrix of the autocumulants of the sources and a matrix representing the juxtaposition of the direction vectors of the sources as follows:

$$C_{m,x} = A_q\, \zeta_{m,s}\, A_q^{\mathrm{H}} \qquad \text{[[(11)]]}$$

where $\zeta_{m,s}$ = diag([$C_{1,1,\ldots,1,s}^{1,1,\ldots,1}, \ldots, C_{P,P,\ldots,P,s}^{P,P,\ldots,P}$]) is the full-rank diagonal matrix of the $m = 2q$ order autocumulants $C_{p,p,\ldots,p,s}^{p,p,\ldots,p}$ des sources, sized (P x P), and where A_q = $[a_1^{\otimes(q-1)} \otimes a_1^{*} \ldots\ldots a_p^{\otimes(q-1)} \otimes a_p^{*}]$, sized (N^q x P) and assumed to be of full rank, represents the juxtaposition of the P column vectors $[a_p^{\otimes(q-1)} \otimes a_p^{*}]$.

3. (currently amended): [[A]] The method according to ~~one of the~~ claim[[s]] 1 ~~and 2~~, further comprising ~~at least~~ the following steps:

[[0]] a) : the building, from the different observation vectors $x(t)$, of an estimate $\hat{\mathbf{C}}_{m,x}$ of the matrix of statistics $C_{m,x}$ of the observations,

[[1]] b) : [[the]] decomposing a singular value ~~decomposition~~ of the matrix $\hat{\mathbf{C}}_{m,x}$, [[the]] and deducing therefrom of an estimate P;^ of the number of sources P and a square root $\hat{\mathbf{C}}^{1/2}_{m,x}$ of $\hat{\mathbf{C}}_{m,x}$, ~~for example~~ in taking $\hat{\mathbf{C}}^{1/2}_{m,x} = \boldsymbol{E_s}\, |\boldsymbol{L_s}|^{1/2}$ where |.| designates the absolute value operator, where $\boldsymbol{L_s}$ and $\boldsymbol{E_s}$ are respectively the diagonal matrix of the P;^ greatest real eigenvalues (in terms of absolute value) of $\hat{\mathbf{C}}_{m,x}$ and the matrix of the associated orthonormal eigenvectors;

[[2]] c): [[the]] ~~extraction~~ extracting, from the matrix $\hat{\mathbf{C}}^{1/2}_{m,x} = [\Gamma_1^{\mathrm{T}}, \ldots, \Gamma_N^{\mathrm{T}}]^{\mathrm{T}}$, of the N matrix blocks Γ_n : each block Γ_n sized ($N^{(q-1)}$ x P) being constituted by the $N^{(q-1)}$ successive rows of $\hat{\mathbf{C}}^{1/2}_{m,x}$ starting from the "$N^{(q-1)}(n-1)+1$"th row;

[[3]] d): [[the]] building of the $N(N-1)$ matrices $\Theta_{n1,n2}$ defined, for all $1 \leq n_1 \neq n_2 \leq N$, by $\Theta_{n1,n2} = \Gamma_{n1}^{\#}\, \Gamma_{n2}$ where # designates the pseudo-inversion operator;

[[4]] e): [[the]] determining of the matrix V_{sol}, resolving the problem of the joint diagonalization of the N(N-1) matrices $\Theta_{n1,n2}$;

[[5]] f): for each of the P columns $\boldsymbol{b_p}$ of A;^$_q$, the extraction of the $K = N^{(q-2)}$ vectors $\boldsymbol{b_p}(k)$ stacked beneath one another in the vector $\boldsymbol{b_p} = [\boldsymbol{b_p}(1)^{\mathrm{T}}, \boldsymbol{b_p}(2)^{\mathrm{T}}, \ldots, \boldsymbol{b_p}(K)^{\mathrm{T}}]^{\mathrm{T}}$;

[[6]] g): [[the]] ~~conversion~~ converting [[of]] said column vectors $\boldsymbol{b_p}(k)$ sized (N^2 x 1) into a matrix $\boldsymbol{B_p}(k)$ sized (N x N) ;

[[7]] h): [[the]] joint singular value decomposition or joint diagonalization of the $K = N^{(q-2)}$ matrices $\boldsymbol{B_p}(k)$ in retaining therefrom, as an estimate of the column vectors of $\boldsymbol{A}$, of the eigenvector common to the K matrices $\boldsymbol{B_p}(k)$ associated with the highest eigenvalue (in terms of modulus);

[[8]] i): [[the]] repetition of the steps [[5 to 7]] f) to h) for each of the P columns of A;^$_q$ for the estimation, without any particular order and plus or minus a phase, of the P direction vectors $\boldsymbol{a_p}$ and therefore the estimation, plus or minus a unitary trivial matrix, of the mixture matrix $\boldsymbol{A}$.

4. (currently amended): [[A]] <u>The</u> method according to ~~one of the~~ claim[[s]] 1 ~~to 3~~ , wherein the number of sensors N is greater than or equal to the number of sources P and ~~wherein the method comprises~~ <u>comprising</u> a step of extraction of the sources, consisting of the application to the observations $\boldsymbol{x}(t)$ of a filter built by means of the estimate $A;^\wedge$ of $\boldsymbol{A}$.

5. (currently amended): [[A]] <u>The</u> method according to ~~one of the~~ claim[[s]] 2 ~~to 4~~ , wherein $\boldsymbol{C}_{m,x}$ is equal to the matrix of quadricovariance Qx and wherein m = 4.

6. (currently amended): [[A]] <u>The</u> method according to ~~one of the~~ claim[[s]] 2 ~~to 4~~ , wherein $\boldsymbol{C}_{m,x}$ is equal to the matrix of hexacovariance Hx and wherein m = 6.

7. (currently amended): [[A]] <u>The</u> method according to ~~one of the~~ claim[[s]] 1 ~~to 6~~ , comprising a step for the evaluation of the quality of the identification of the associated direction vector in using a criterion such that:

$$D(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots.., \alpha_P)$$

where

$$\alpha_p = \min_{1 \le i \le P} [d(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)] \qquad [[(17)]]$$

and where $d(\boldsymbol{u},\boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that :

$$d(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{|\boldsymbol{u}^H \boldsymbol{v}|^2}{(\boldsymbol{u}^H \boldsymbol{u})(\boldsymbol{v}^H \boldsymbol{v})} \qquad [[(18)]]$$

8. (currently amended): [[A]] <u>The</u> use of the method according to ~~one of the~~ claim[[s]] 1 , ~~to 7~~ for <u>use in</u> a communications network.

9. (currently amended): A use of the method according to ~~one of the~~ claim[[s]] 1 ~~to 7~~ for goniometry using identified direction vectors.

10. (new): The method according to claim 2, wherein the number of sensors N is greater than or equal to the number of sources P and wherein the method comprises a step of extraction of the sources, consisting of the application to the observations $x(t)$ of a filter built by means of the estimate $\hat{A}$ of A.

11 (new): The method according to claim 3, wherein the number of sensors N is greater than or equal to the number of sources P and wherein the method comprises a step of extraction of the sources, consisting of the application to the observations $x(t)$ of a filter built by means of the estimate $\hat{A}$ of A.

12 (new): The method according to claim 3, wherein $C_{m,x}$ is equal to the matrix of quadricovariance Qx and wherein m = 4.

13. (new): The method according to claim 4, wherein $C_{m,x}$ is equal to the matrix of quadricovariance Qx and wherein m = 4.

14. (new): The method according to claim 3, wherein $C_{m,x}$ is equal to the matrix of hexacovariance Hx and wherein m = 6.

15. (new): The method according to claim 4, wherein $C_{m,x}$ is equal to the matrix of hexacovariance Hx and wherein m = 6.

16. (new): The method according to claim 2, comprising a step for the evaluation of the quality of the identification of the associated direction vector in using a criterion such that:

$$D(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots\ldots, \alpha_P)$$

where

$$\alpha_p = \min_{1 \le i \le P} [d(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)]$$

and where $d(\boldsymbol{u},\boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that :

$$d(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{|\boldsymbol{u}^H \boldsymbol{v}|^2}{(\boldsymbol{u}^H \boldsymbol{u})(\boldsymbol{v}^H \boldsymbol{v})}$$

17. (new): The method according to claim 3, comprising a step for the evaluation of the quality of the identification of the associated direction vector in using a criterion such that:

$D(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots\ldots, \alpha_P)$

where

$$\alpha_p = \min_{1 \le i \le P} [d(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)]$$

and where $d(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that :

$$d(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{\left|\boldsymbol{u}^{\mathrm{H}}\boldsymbol{v}\right|^2}{\left(\boldsymbol{u}^{\mathrm{H}}\boldsymbol{u}\right)\left(\boldsymbol{v}^{\mathrm{H}}\boldsymbol{v}\right)}$$

18. (new): The method according to claim 4, comprising a step for the evaluation of the quality of the identification of the associated direction vector in using a criterion such that:

$D(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots\ldots, \alpha_P)$

where

$$\alpha_p = \min_{1 \le i \le P} [d(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)]$$

and where $d(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that :

$$d(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{\left|\boldsymbol{u}^{\mathrm{H}}\boldsymbol{v}\right|^2}{\left(\boldsymbol{u}^{\mathrm{H}}\boldsymbol{u}\right)\left(\boldsymbol{v}^{\mathrm{H}}\boldsymbol{v}\right)}$$

19. (new): The method according to claim 5, comprising a step for the evaluation of the quality of the identification of the associated direction vector in using a criterion such that:

$D(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots\ldots, \alpha_P)$

where

$$\alpha_p = \min_{1 \le i \le P} [d(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)]$$

and where $d(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that :

$$d(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{\left|\boldsymbol{u}^{\mathrm{H}}\boldsymbol{v}\right|^2}{\left(\boldsymbol{u}^{\mathrm{H}}\boldsymbol{u}\right)\left(\boldsymbol{v}^{\mathrm{H}}\boldsymbol{v}\right)}$$

20. (new): The method according to claim 6, comprising a step for the evaluation of the quality of the identification of the associated direction vector in using a criterion such that:

$$D(A, \hat{A}) = (\alpha_1, \alpha_2, \ldots\ldots, \alpha_P)$$

where

$$\alpha_p = \min_{1 \leq i \leq P} [d(\boldsymbol{a}_p, \hat{\boldsymbol{a}}_i)]$$

and where $d(\boldsymbol{u}, \boldsymbol{v})$ is the pseudo-distance between the vectors $\boldsymbol{u}$ and $\boldsymbol{v}$, such that :

$$d(\boldsymbol{u}, \boldsymbol{v}) = 1 - \frac{\left|\boldsymbol{u}^{H}\boldsymbol{v}\right|^2}{\left(\boldsymbol{u}^{H}\boldsymbol{u}\right)\left(\boldsymbol{v}^{H}\boldsymbol{v}\right)}$$